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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,565	07/18/2003	Abhijeet Gole	112056-0098	4816

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EXAMINER	
HUSSAIN, TAUQIR	

ART UNIT	PAPER NUMBER
2152	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,565	GOLE ET AL.	
	Examiner	Art Unit	
	Tauqir Hussain	2152	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 July 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-23 are pending in this application.

Claim Objections

2. Claim 14, recite, "a predetermined Fibre Channel ID". There is English spelling correction needed for the word "Fiber". Appropriate correction is required.

3. Claim 16, has a wrong dependency, which refers back to claim 16. However examiner suggests claim 16 is dependent of claim 15 for examination purposes. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 15 and 16, are rejected under 35 U.S.C. 102(e) as being anticipated by Craddock et al. (Pub. No.: US 2003/0061296 A1), hereinafter "Craddock".

6. As to claim 15, Craddock discloses, the invention substantially, including, (a) attempting a first remote direct memory access read operation directed to a predefined

hardware address and a predefined port number (Craddock, Fig.1, [0135, lines 1-5], where attempt has made to read data and [0051, lines 1-13], where subnet manager is configuring physical ports and local address, which is used for read and write operations); and

(b) performing, in response to a successful step (a), a first remote direct memory access write operation directed to the predefined hardware address and the predefined port number (Craddock, [0142, lines 1-16], where attempt has made to write data and [0051, lines 1-13], where subnet manager is configuring physical ports and local address, which is used for read and write operations).

7. Claim 16, is rejected for the same rationale as applied to claim 15 above.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claim 1-3, 13-14 and 17-19, are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock in view of Plummer et al. (Pub. No.: US 2005/0166185 A1), hereinafter "Plummer".

10. As to claim 1, Craddock discloses the invention substantially, including, a method for initiating a peer-to-peer communication session, the method comprising the steps of:

attempting a first remote direct memory access (RDMA) read operation directed to a cluster partner (Craddock, Fig.1, [0135, lines 1-5], where attempt has made to read data);

performing, in response to a successful first RDMA read operation, a first RDMA write operation to the cluster partner (Craddock, [0142, lines 1-16], where attempt has made to write data). Craddock does not disclose explicitly performing, in response to a successful RDMA write operation, a second RDMA read operation directed to the cluster partner and performing in response to a successful second RDMA read operation, a second RDMA write operation to the cluster partner. However, Plummer discloses, using java programming language steps can be put in loop to repeat the steps.

Therefore, using the rationale for read and write step above it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock with the teaching of Plummer to use computer programming language to have the steps looped repeatedly as it is well known in the art and in java or basic programming language to use "go to" or "do" "recursion" loop etc. Further to provide a computer-implemented method for substantially eliminating C recursion from the execution of static initializer methods in a virtual machine environment includes rewriting native C code associated with a static initializer as a Java programming

language method, and using a transition frame in a Java programming language stack to execute the Java programming language method.

11. As to claim 2, Craddock and Plummer discloses the invention substantially as in parent claim 1, including, wherein the step of attempting a first RDMA read operation further comprises the step of issuing a RDMA read operation to the cluster partner requesting a pre-set memory address location that is associated with a status variable on the cluster partner (Craddock, [0135, lines 1-5], where memory space is reserved for read data and [0137, lines 1-9], where details of the pre-set memory can be observed).

12. As to claim 3, Craddock and Costello discloses the invention substantially as in parent claim 1, including, exchanging a set of peer connection information (Craddock, [0005, lines 1-4],where nodes are peer communicating with each other);

passing a set of client information to the cluster partner (Craddock, [0077, lines 3-5]);

creating a set of appropriate communication ports (Craddock, [0034, lines 8-9]);

alerting the cluster partner of a ready status (Craddock, [0132, lines 1-3], where response could be an alert message); and

alerting a set of clients that the cluster partner is in a ready state (Craddock, Fig.12, element-passive side, where communication management reply message is used to accept the connection which could be a ready status).

13. As to claim 17, Craddock and Plummer disclose, the invention substantially as in parent claim 15, including, wherein the predefined hardware address comprises a fiber channel identifier (Craddock, [0051, lines 11-13], where channel adaptor is fiber channel and configuring means it must have the reference number or MAC address could be the channel ID for configuration purposes).

14. As to claim 18, Craddock and Plummer disclose, the invention substantially as in parent claim 15, including, wherein the predefined port number comprises a virtual interface (Craddock, [0051, lines 1-13], where VL's are virtual interface and has a unique port number assigned).

15. As to claim 19, Craddock and Plummer disclose, the invention substantially as in parent claim 15, including, wherein the first remote direct memory access is delivered to a predefined memory address storing booting status information (Craddock, [0135, lines 1-5], where memory space is reserved for read operation and invoking can be interpret as booting).

16. Claims 4-9, are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock and Plummer as applied to claim 1-3 above in view of Costello et al. (Pub. No.: US 2003/0078946 A1), hereinafter "Costello".

17. As to claim 4, Craddock and Plummer disclose, the invention substantially as in parent claim 3. However, Craddock and Plummer are silent on wherein the set of peer connection information comprises a version number. Costello, however discloses, wherein the set of peer connection information comprises a version number (Costello, Abstract, lines 3-6, where version number is acquired by the leader node).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock and Plummer with the teachings of Costello in order to provide a cluster of computer system nodes share direct read/write access to storage devices via a storage area network using a cluster sytem (Costello, Abstract).

18. As to claim 5, Craddock, Plummer and Costello discloses, the invention substantially as in the parent claim 1 above, including, collecting from a set of clients, the set of client information (Costello, [0084, lines 1-13], where client configuration information is collected); and

transferring the collected set of client information to the cluster partner (Costello, [0084, lines 1-13], where server/cluster partner collects the client information).

19. As to claim 6, Craddock, Plummer and Costello discloses, the invention substantially as the parent claim 5, including, wherein the client information comprises a number of communication ports required (Costello, [0083, lines 1-9], where node could be interpret as communication port).

20. As to claim 7, Craddock, Plummer and Costello discloses, the invention substantially as the parent claim 5, including, wherein the set of client information further comprises an amount of memory requested by a particular client (Costello, [0069, lines 1-25, where each client carries a token which let him use the specific amount of memory from system memory or cache).

21. As to claim 8, Craddock, Plummer and Costello discloses, the invention substantially as the parent claim 1, including, wherein the cluster partner is a storage system (Craddock, Fig.1, element-116, [0009, lines 1-3], where SAN is a storage system).

22. As to claim 9, Craddock, Plummer and Costello discloses, the invention substantially as the parent claim 1, including, wherein the cluster partner is an application server (Costello, [0008, lines 1-6]).

As to claim 13, is rejected for the same rationale as applied to claim 1 above and further it is obvious that in a cluster environment if operations are distributed among different machines, therefore it will be obvious to one ordinary skilled in the art to distribute two operations as single operation to two machines.

23. As to claim 14, Craddock and Plummer discloses, the invention substantially as in parent claim 13, including, wherein the first remote direct memory access read operation is performed over a Virtual Interface connection having a pre-determined and pre-assigned Virtual Interface Number and a pre-determined Fiber Channel ID (Craddock, Fig.3A, [0050, lines 1-4], where verb interface can be interpret as virtual interface and [0051, lines 1-13], where each virtual lane has its own flow control and each VL has its own ID which could be relate to virtual interface number or ID and fiber channel ID can referred to as host channel adaptor element-300).

24. Claims 10-12 and 20-23, are rejected under 35 U.S.C. 103(a) as being unpatentable over Craddock in view of Sutherland et al. (Pub. No.: US 2002/0114341 A1), hereinafter "Sutherland".

25. As to claim 10, Craddock discloses the invention substantially. However, Craddock is silent on a cluster connection manager adapted to initiate a peer to peer communication session with a cluster partner upon initialization of the storage operating system. Sutherland, however discloses, a cluster connection manager adapted to initiate a peer to peer communication session with a cluster partner upon initialization of the storage operating system (Sutherland, Abstract, lines 12-16, where, storage coordinator manager initiates and distributes the processing data among selected nodes).

Therefore, it would have been obvious to one ordinary skilled in the art at the time the invention was made to combine the teachings of Craddock with teachings of Sutherland in order to provide a peer-to-peer storage system includes a storage coordinator that centrally manages distributed storage resources in accordance with system policies administered through a central administrative console.

26. Claim 20, is rejected for the same rationale as applied to claim 10 above.

27. As to claim 11, Craddock and Sutherland discloses, the invention substantially as in parent claim 10, including, means for performing a remote first direct memory access (RDMA) read operation directed to a cluster partner (Craddock, Fig.1, [0135, lines 1-5], where device 1429 is a mean to perform read function);

means for performing, in response to a successful first RDMA read operation, a first RDMA write operation to the cluster partner (Craddock, [0142, lines 1-16], where element 1432 is a mean for performing writing function). Using the rationale for read and write step it would have been obvious to one ordinary skilled in the art at the time the invention was made to modify the teachings or Craddock to repeat the steps more than one time in order to provide a distributed data processing system for processing storage I/O in a system area network. In addition the process can be used in a peer-to-peer storage system uses a storage coordinator that centrally manages distributed storage resources in accordance with system policies administered through a central administrative console.

28. As to claim 12, Craddock and Sutherland discloses, the invention substantially as in parent claim 10, including, means for exchanging a set of peer connection information ([0004, lines 1-4]);

means for passing a set of client information to the cluster partner (Craddock, [0077, lines 3-5]);

means for creating a set of appropriate communication ports (Craddock, [0034, lines 8-9];

means for alerting the cluster partner of a ready status (Craddock, [0132, lines 1-3], where response could be an alert message); and

means for alerting a set of clients that the cluster partner is in a ready state (Craddock, Fig.12, element-passive side, where communication management reply message is used to accept the connection which could be a ready status).

29. As to claim 21, Craddock and Sutherland discloses, the invention substantially as in parent claim 20, including, wherein the reliable peer-to-peer connection is established without requiring a storage operating system executing on each storage system partner to be fully functioning (Sutherland, Abstract, lines 17-20], where in operations are not interrupted if any of the cluster storage coordinators should fail).

30. As to claim 22, Craddock and Sutherland discloses, the invention substantially as in parent claim 20, including, wherein the peer-to-peer connection is a virtual interface connection (Craddock, Fig.3A, [0050, lines 1-4], where verb interface is virtual interface)

31. As to claim 23, Craddock and Sutherland discloses, the invention substantially as in parent claim 20, including, wherein the peer process is a cluster connection client that requests services from the cluster connection manager (Sutherland, Abstract, lines 14-47,where users requesting for files are clients).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tauqir Hussain whose telephone number is 571-270-1247. The examiner can normally be reached on 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bunjob Jaroenchonwanit can be reached on 571 272 3913. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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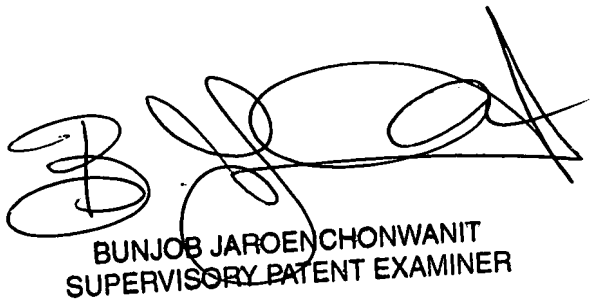

BUNJOB JAROENCHONWANIT
SUPERVISORY PATENT EXAMINER

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :09/22/2003,05/13/2004,01/05/2005,05/05/2006.